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Serial No. 09/757,479
October 22, 2003

AMENDMENTS TO THE CLAIMS

The following claim set replaces all prior versions, and listings, of claims in the application:

1-23. (Canceled)

24. (Currently Amended) Apparatus for mixing a fluid medium with a solids-liquid suspension, comprising:

- a mixer casing having an interior space, ~~an inlet attached by a flange to inlet piping for introducing a flow of solids-liquid suspension into said interior space of said mixer casing,~~ and an outlet ~~for discharging said solids-liquid suspension from said interior space, wherein said inlet and outlet define a flow path for said solids-liquid suspension therebetween; and defining a flow axis between said inlet and outlet;~~
- a conduit ~~provided in one of said inlet piping and said mixer casing for feeding the~~ a fluid medium into said interior space of said casing or inlet piping at a location between said inlet and outlet thereof; and
- a rotor ~~freely rotatably mounted in said interior space of said casing between said inlet and said outlet thereof and positioned for contact with said flow of solids-liquid suspension along said flow path thereof, wherein for free rotation about an axis of rotation which is transverse to said flow axis,~~
- said rotor ~~includes having a center~~ a shaft mounted on bearings in said casing to allow for free rotation of said rotor about an axis of rotation which is transverse to said flow axis, and blades which ~~leave said~~ define an open rotor center open and coinciding with said flow path of said solids-liquid suspension to thereby allow for said flow of the solids-liquid suspension therethrough to pass through said rotor as said solids-liquid suspension flows from said

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inlet to said outlet of said casing along said flow path thereof; and
wherein

said inlet introduces the flow of solids-liquid suspension to cause a
deviation of the mass center of said flow of solids-liquid suspension
when introduced into the interior space of said casing so that the
mass center of said flow of solids-liquid suspension contacts said
blades eccentrically relative to said axis of rotation thereof thereby
responsively rotating said rotor in a predetermined rotational
direction, and wherein

said fluid medium and said solids-liquid suspension are mixed by rotation
of said rotor blades as said fluid medium and solids-liquid
suspension flow through said open rotor center along said flow path
to said outlet of said casing.

25. (Previously Presented) Apparatus as recited in claim 24, wherein said inlet is provided with at least one throttling member which throttles the flow of fluid into said casing.

26. (Currently Amended) Apparatus as recited in claim ~~25~~ 24, wherein said ~~throttling member~~ said inlet comprises at least one rib mounted in the vicinity of said ~~inlet in said casing~~ for causing the mass center of the flow of fluid solids-liquid suspension entering said casing to deviate from flow centered on said axis of rotation

27. (Currently Amended) Apparatus as recited in claim 25 ~~or~~ 26, wherein said ~~inlet includes a throttling member~~ comprises having a valve mounted in the vicinity of said inlet for causing the mass center of the flow of fluid solids-liquid suspension entering said casing to deviate from flow centered on said axis of rotation.

28. (Currently Amended) Apparatus as recited in claim 27, wherein said valve comprises part of said casing, or is attached to said ~~an~~ inlet flange of said casing, or comprises part of said inlet piping to said casing.

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29. (Previously Presented) Apparatus as recited in claim 24, further comprising at least one stationary mixing member disposed within said casing.

30. (Previously Presented) Apparatus as recited in claim 29, wherein said at least one stationary mixing member is mounted at least 90 degrees from said outlet opposite the direction of rotation of said rotor.

31. (Previously Presented) Apparatus as recited in claim 29, wherein said stationary mixing member comprises a rib attached to a wall of said casing.

32. (Previously Presented) Apparatus as recited in claim 24, wherein said outlet includes an outlet pipe which recovers dynamic pressure from the flow of mixed suspension.

33. (Previously Presented)

34. (Previously Presented) Apparatus as recited in claim 24, wherein said inlet and outlet are disposed with respect to each other so that the direction of flow of fluid changes at most about 100 degrees from said inlet to said outlet.

35. (Previously Presented) Apparatus as recited in claim 24, wherein said outlet is tangential to the direction of rotation of said rotor.

36. (Currently Amended) Apparatus as recited in claim 24, further comprising a ~~wherein said conduit which~~ feeds the fluid medium and a solids-liquid suspension into said interior space of said casing through said inlet thereof ~~or inlet piping and wherein said rotor includes mixing blades which are contacted by the fluid medium and solids-liquid suspension introduced by said conduit so that rotation of the mixing rotor is effected.~~

37. (Currently Amended) Apparatus for mixing a fluid medium with a solids-liquid suspension, comprising:

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a mixer casing defining an interior space and having an inlet for introduction of a mass flow of material which includes the solids-liquid suspension into said interior space, and an outlet for discharging a mixture of the fluid medium and solids-liquid suspension from said interior space;

a conduit for feeding the fluid medium into contact with the solids-liquid suspension within the interior space of said mixer casing; and

a mixing rotor ~~freely rotatably~~ mounted in said interior space of said mixer casing between said inlet and outlet thereof for free rotation about an axis of rotation, said axis of rotation being transverse to an axis of flow leading from said inlet to said outlet; wherein

said mixing rotor including ~~a center~~, a shaft mounted on bearings in said casing to allow for said free rotation thereof, and blades, said blades being positioned so as to establish an open leaving said rotor center open which is coincident with the axis of flow for the solids-liquid suspension and the fluid, wherein the solids-liquid suspension and fluid thereby to enter and flow through the open rotor center as the suspension and fluid flow along said axis of flow between said inlet and outlet of said mixer casing, wherein

said blades are being positioned for contact with the fluid medium and solids-liquid suspension introduced into the mixer casing through said inlet thereof; and wherein to thereby responsively cause the mixing rotor to rotate and mix the fluid medium with the solids-liquid suspension

said casing includes flow-deviation means positioned adjacent said inlet upstream of said rotor for deviating a mass center of the flow of fluid medium and solids-liquid suspension is introduced into the interior space of said mixer casing, and is caused to contact said blades, eccentrically relative to said axis of rotation which thereby

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responsively rotates said rotor in a predetermined rotational direction; wherein
said fluid and said solids-liquid suspension are mixed by rotation of said rotor blades as said fluid and solids-liquid suspension flow through said open rotor center along said flow path to said outlet of said casing.

38-39 (Canceled)

40. (Currently Amended) Apparatus as in claim 37, wherein the further comprising a conduit for introducing introduces the fluid medium directly into an said interior space of said mixer casing along said axis of flow.

41. (Currently Amended) Apparatus as in claim ~~37~~ 40, wherein said inlet includes inlet piping for the mass flow of material, and wherein said conduit introduces the fluid medium into the inlet piping.

42. (Presently Amended) Apparatus as recited in claim 37, wherein said flow-deviation means includes inlet is provided with at least one throttling member which throttles the mass flow of material into said casing and to cause the mass center thereof to deviate eccentrically relative to said axis of rotation.

- 43. (Currently Amended) Apparatus as recited in claim 37 or 42, wherein said flow-deviation means throttling member comprises at least one rib mounted in the vicinity of said inlet in said casing for causing a mass center of the mass flow of material entering said casing to deviate from flow centered on said axis of rotation.

44. (Previously Presented) Apparatus as recited in claim 42, wherein said throttling member comprises a valve mounted in the vicinity of said inlet for causing a mass center of the mass flow of material entering said casing to deviate from flow centered on said axis of rotation.

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45. (Previously Presented) Apparatus as recited in claim 44, wherein said valve comprises a part of said casing.

46. (Previously Presented) Apparatus as recited in claim 44, wherein said inlet includes inlet piping for the mass flow of material, and wherein said throttling member comprises a valve mounted in the vicinity of said inlet piping.

47. (Previously Presented) Apparatus as recited in claim 37, further comprising at least one stationary mixing member disposed within said casing.

48. (Previously Presented) Apparatus as recited in claim 47, wherein said at least one stationary mixing member is mounted at least 90 degrees from said outlet opposite a direction of rotation of said rotor.

49. (Previously Presented) Apparatus as recited in claim 47, wherein said stationary mixing member comprises a rib attached to a wall of said casing.

50. (Previously Presented) Apparatus as recited in claim 37, wherein said outlet includes an outlet pipe which recovers dynamic pressure from the flow of mixed suspension..

51. (Cancelled)

52. (Previously Presented) Apparatus as recited in claim 37, wherein said inlet and outlet are disposed with respect to each other so that direction of fluid flow changes at most about 100 degrees from said inlet to said outlet.

53. (Previously Presented) Apparatus as recited in claim 37, wherein said outlet is tangential to the direction of rotation of said rotor.